REMARKS

Applicants have canceled non-elected claims 1-19 and 25-34, as well as claims 55-59, without prejudice or disclaimer. Applicants have also added claims 60-70. Further, Applicants have amended the title of the invention. Attached hereto is a marked-up version of the changes made by the current amendments, captioned "Version With Markings To Show Changes Made." The amendments are fully supported by the specification and claims as originally filed, and thus no new matter has been added.

Claims 35-54 and 60-70 are pending. Applicants respectfully request reconsideration of the pending objections and rejections in view of the following remarks.

I. Fees for Pending Claims

Applicants note that the Fee Transmittal Sheet submitted February 8, 2000 appears to have incorrectly listed the number of total and independent claims pending. At the time, claims 1-19 and 25-59 were pending- 54 total claims, with 9 independent claims (claims 1, 17, 35, 40-43, 55, and 58). However, the Fee Transmittal Sheet listed only 53 total and 5 independent claims. Applicants cannot determine the amount actually charged by the Office to Applicants' deposit account for the pending claims; please charge our deposit account 08-3425 for any prior underpayment.

For the purposes of determining the fees for the presently pending claims, Applicants have herein presumed that only the number noted on the previous Fee Transmittal (53 total claims and 5 independent claims) were previously paid for. Should the Examiner determine that more than 5 independent claims were previously paid for, please do not charge our deposit account for the instant additional claim fee noted on the enclosed Fee Transmittal Sheet.

II. Rejections Under 35 U.S.C. §§ 101 and 112, First Paragraph

The Examiner has rejected claims 35-59 under 35 U.S.C. § 101 as allegedly being "drawn to an invention with no apparent or disclosed utility." *See* Paper No. 6, page 3. Specifically, the Examiner contends that "[s]ince the instant invention does not disclose a 'real world' use for proteins of SEQ ID NO:2, the claimed invention is incomplete, and therefore, does not meet the requirements of 35 U.S.C. § 101 as being useful." *See* Paper No. 6, page 4.

Applicants respectfully disagree and traverse.

Contrary to the Examiner's assertions, Applicants have indeed asserted a specific and substantial utility for the claimed invention. For example, in the specification at page 21, lines 31-34, Applicants teach that the chemotactic cytokine I (CC I) polypeptides of the invention may "be employed to enhance host defenses against resistant chronic and acute infections, for example, mycobacterial infections via the attraction and activation of microbicidal leukocytes." Therefore, Applicants submit that the specification clearly and specifically asserts a biological role for the CC I protein, *i.e.,* in mediating the recruitment of leukocytes.

Applicants respectfully remind the Examiner that Applicants need only make *one* credible assertion of specific utility for the claimed invention to satisfy 35 U.S.C. § 101 and 35 U.S.C. § 112; additional statements of utility, even if not "credible," do not render the claimed invention lacking in utility. *See, e.g. Raytheon v. Roper,* 220 U.S.P.Q. 592, 598 (Fed. Cir. 1983), *cert. denied,* 469 U.S. 835 (1984) ("When a properly claimed invention meets at least one stated objective, utility under 35 U.S.C. § 101 is clearly shown."). Moreover, the U.S. Court of Appeals for the Federal Circuit recently stated with respect to the rejection of claims for lack of utility that:

> The PTO cannot make this type of rejection . . . unless it has reason to doubt the objective truth of the statements contained in the written description. *See Brana,* 51 F.3d at 1566, 34 U.S.P.Q.2d at 1441 ("[T]he PTO has the initial burden of challenging a presumptively correct assertion of utility in the disclosure. Only after the PTO provides evidence showing that one of ordinary skill in the art would reasonably doubt the asserted utility does the burden shift to the applicant to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility.") (citations omitted); *In re Marzocchi,* 439 F.2d 220, 223, 169 U.S.P.Q. 367, 369 (C.C.P.A. 1971). . . . The PTO may establish a reason to doubt an invention's asserted utility when the written description "suggest[s] an inherently unbelievable undertaking or involve[s] implausible scientific principles." *Brana,* 51 F.3d at 1566, 34 U.S.P.Q.2d at 1441; *See also In re Eltgroth,* 419 F.2d 918, 164 U.S.P.Q. 221 (C.C.P.A. 1970) (control of aging process).

In re Cortright, 49 U.S.P.Q.2d 1464, 1466 (Fed. Cir. 1999). Thus, the initial burden is on the Examiner to establish why one of ordinary skill in the art would reasonably doubt Applicants' assertion regarding utility. Accordingly, as discussed below, Applicants submit that the Examiner has not met the necessary burden to establish and maintain a rejection of the claims for lack of utility under 35 U.S.C. § 101.

The Examiner addresses Applicants' assertion of a specific utility by stating that:

> The breadth of its biological functions and possible uses have been disclosed in the specification, and they are largely dependent upon the structural homology of the instant cytokine to human MRP-14 (46.739%) and to S100 protein (56% identity) . . . . The instant invention lacks patentable utility because the phenomena of the ligand, the instant cytokine I, binding to its receptor and transduction of the signal for the claimed effectiveness and functionality of the chemotactic cytokine are hypothetical.

See Paper No. 6, page 3. However, a specific assertion of the utility for CC I polypeptide, not mentioned by the Examiner, was made in the application as originally filed; *i.e.,* that CC I polypeptides of the invention mediate the recruitment of leukocytes. As such, it logically follows that there is an immediately obvious patentable use for the polypeptides of the present invention. Furthermore, Applicants' asserted utility is in fact specific to CC I and not merely an assumption based on its similarity to known proteins, as alleged by the

Examiner. In fact, Applicants note that not all chemokines, much less all proteins, mediate the recruitment of leukocytes.

Additionally, Applicants respectfully direct the attention of the Examiner to the post-filing date reference Miranda et al., *FEBS Letters,* 488(1-2):85-90 (2001) (submitted herewith as reference AA with the enclosed Information Disclosure Statement). Miranda et al. disclose that human S100A12 mediates the chemotaxis of neutrophils and macrophages, and suggest that S100A12 plays a role in the recruitment of leukocyte sub-populations. Because the polypeptide sequence of S100A12 is identical to the CC I amino acid sequence of SEQ ID NO:2, the observations described above confirm Applicants' assertion of a specific utility, *i.e.,* that the CC I protein mediates the recruitment of leukocytes.

Applicants also note that it is well known in the art that the recruitment of leukocytes plays a pivotal role in, *inter alia*, disorders related to the inflammatory response, such as arthritis and atherosclerosis. *See, e.g.,* Watanabe, T. et al., *Int. J. Cardiol.* 54:S51-S60 (1996); Johnston, B., et al., *J. Immunol.* 159:4514-4523 (1997); Bush, K.A., et al., *Clin. Exp. Immunol.* 123:487-495 (2001). Consequently, it would indeed be reasonable to one skilled in the art that CC I polypeptides could be utilized as mediators of leukocyte recruitment in such inflammatory disorders, including arthritis and atherosclerosis.

Applicants note that the Patent Office has stated that utility can exist for therapeutic inventions "despite the fact that an applicant is at a very early stage in the development of a pharmaceutical product or therapeutic regimen based on a claimed pharmacological or bioactive compound or composition." M.P.E.P. § 2107.01(III). "Usefulness in patent law, and in particular in the context of pharmaceutical inventions, necessarily includes the expectation of further research and development. The stage at

which an invention in this field becomes useful is well before it is ready to be administered to humans." *In re Brana,* 51 F.3d 1560, 1568 (Fed. Cir. 1995) (emphasis added). Indeed, there is no need to prove that a correlation exists between a particular activity and an asserted therapeutic use of a compound as a matter of statistical certainty or provide actual evidence of success in treating humans where such a utility is asserted. *See* M.P.E.P. §§ 2107.01(III) and 2701.03. All that is required of Applicants is that there be a reasonable correlation between the biological activity and the asserted utility, as is clearly present in this case. *See Nelson v. Bowler*, 626 F.2d 853, 857 (C.C.P.A. 1980).

Further, Applicants respectfully point out that their position coincides with that of the United States Patent and Trademark Office ("USPTO") as set forth in the recently published Revised Interim Utility Guidelines Training Materials. In particular, the USPTO's discussion of therapeutic proteins at pages 27-29 makes clear that the above disclosed utilities are specific and substantial. *See also* Example 10, "DNA Fragment encoding a Full Open Reading Frame (ORF)," at pages 53-55. Thus, in agreement with the USPTO's own commentary, and contrary to the Examiner's position, Applicants assert that the pending claims do indeed satisfy the utility requirement.

Contrary to the Examiner's allegation, the instant case is not analogous to the situation in *Brenner v. Manson,* contrary to the Examiner's assertion. In *Brenner*, the issue was not whether a disclosed utility was sufficient. Rather, the applicant was trying to establish an earlier date of invention for the purpose of provoking an interference (383 U.S. at 521). Indeed, the examiner's initial basis for refusing to declare an interference was that the applicant had failed to disclose any utility at all (*Id.* at 521). Thus, the issue in *Brenner* was whether the applicant had made an adequate "showing" to establish a prior date of invention, i.e., whether "the process claim has been reduced to production of a product shown to be useful" through actual demonstration of the utility (*Id.* at 534). The

only evidence offered by the applicant to make this showing was a reference to an article by a third party showing the activity of an adjacent homologue of the subject steroid compound (*Id.* at 521-522). The appellate court agreed that the applicant had done nothing to show or demonstrate that the compound was indeed useful (*Id.* at 521). Thus, it upheld the rejection of the request for declaration of an interference (*Id.* at 536).

In contrast, the issue in the present case is whether the instant application explicitly teaches at least one utility that meets the requirements of § 101. As put forth above, Applicants disclose in the specification the credible assertion that CC I polypeptides of the present invention mediate the recruitment of leukocytes. Moreover, Applicants have provided evidence that the CC I polypeptide of SEQ ID NO:2 mediates the recruitment of leukocytes (*See* Miranda et al., *supra*).

Applicants point out that subsequently-generated data (*e.g.*, Miranda et al.) can be used to support the credibility of a utility asserted in the specification. As the Federal Circuit held in *In re Brana*, evidence dated after the filing date "can be used to substantiate any doubts as to the asserted utility since this pertains to the accuracy of a statement already in the specification." 51 F. 3d. 1560, 1567 at n.19 (Fed. Cir. 1995). Such evidence "goes to prove that the disclosure was in fact enabling when filed (*i.e.*, demonstrated utility)." *Id., citing In re Marzocchi*, 439 F2d. at 224 n.4, 169 U.S.P.Q. at 370 n.4. Indeed, the Utility Examination Guidelines in the M.P.E.P. specifically contemplate the use of such additional data:

> In such a case, the examiner should challenge the use and require sufficient evidence of operativeness. The purpose of this authority is to enable an applicant to cure an otherwise defective factual basis for the operability of an invention. Because this is a curative authority (e.g., evidence is requested to enable an applicant to support an assertion that is inconsistent with the facts of record in the application), Office personnel should indicate not only why the factual record is defective in relation to the assertions of the applicant, but also, where appropriate, what type of evidentiary showing can be provided by the applicant to remedy the problem.

See M.P.E.P. § 2107.02(V) at 2100-41 to 42.

Applicants have shown that CC I has biological activities that are reasonably correlated with the asserted utilities, as discussed above. Thus, the only reasonable conclusion that can be reached based on the data and assertions of utility in the specification, supported by Miranda et al., is that the present invention is useful for the purposes asserted in the specification, namely mediating the recruitment of leukocytes. Accordingly, even assuming *arguendo* that the Examiner has made a *prima facie* showing that Applicants' asserted utility is not specific, substantial, or credible, Applicants respectfully submit that the *prima facie* showing has been rebutted, and that the presently claimed invention possesses specific, substantial, and credible utilities which constitute patentable utilities under 35 U.S.C. § 101.

In view of the above, Applicants respectfully submit that the presently claimed invention possesses specific, substantial, credible, and well-established utilities which constitute patentable utilities under 35 U.S.C. § 101. Because Applicants' assertions of utility are sufficient to satisfy the requirements of 35 U.S.C. § 101, it is respectfully requested that the Examiner's rejection of the claims under 35 U.S.C. § 101 be reconsidered and withdrawn.

The Examiner also rejected claims 35-59 under 35 U.S.C. § 112, first paragraph. *See* Paper No. 6, page 4. Specifically, it is the Examiner's contention that "since the claimed invention is not supported by either a specific and substantial utility or well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention." *Id.*

For the reasons discussed above in response to the rejection under 35 U.S.C. § 101, Applicants respectfully assert that the claimed invention is supported by a credible and

specific asserted utility. The Examiner "should not impose a 35 U.S.C. § 112, first paragraph, rejection grounded on a 'lack of utility' basis unless a 35 U.S.C. § 101 rejection is proper." M.P.E.P. § 2107.01 (IV). Therefore, because the claimed invention complies with the utility requirement of 35 U.S.C. § 101, Applicants respectfully request that the Examiner reconsider and withdraw the rejection under 35 U.S.C. § 112, first paragraph, based on alleged lack of utility of the claimed invention.

III. Rejections Under 35 U.S.C. § 112, First Paragraph

The Examiner has rejected claims 35-59 under 35 U.S.C. § 112, first paragraph as allegedly "containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention." *See* Paper No. 6, page 5.

Applicants respectfully disagree and traverse.

Initially, Applicants note that the Examiner's argument is directed specifically to the written description requirement, rather then enablement. Applicants point out that the guidelines for enablement as written in the M.P.E.P. state that in order to make such a rejection, the "examiner has the initial burden to establish a reasonable basis to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 1562, 27 U.S.P.Q.2d 1510, 1513 (Fed. Cir. 1993) (examiner must provide a reasonable explanation as to why the scope of protection provided by a claim is not adequately enabled by the disclosure)." M.P.E.P. 2164.04. In fact, the "minimal requirement is for the examiner to give reasons for the uncertainty of the enablement." *Id.* at 2100-133; *In re Bowen*, 492 F.2d 859, 862-63, 181 U.S.P.Q. 48, 51 (CCPA 1974). Such reasons should focus on the "factors, reasons, and evidence that lead the examiner to conclude that the specification

fails to teach how to make and use the claimed invention . . . ." M.P.E.P. 2164.04 at 2100-133.

Applicants respectfully point out that the Examiner has provided no explanation as to why the instant claims are "not adequately enabled by the disclosure." Rather, all of the Examiner's statements are specifically directed to the written description requirement. For example, the Examiner states at page 5, lines 7-8 that "[t]he written description is not commensurate in scope with the claims drawn to mature forms of the polypeptide of SEQ ID NO:2." Thus, Applicants respectfully assert that the Examiner has not met the necessary burden to establish and maintain a rejection of the claims for lack of enablement under 35 U.S.C. § 112, first paragraph, and respectfully request that the instant enablement rejection be reconsidered and withdrawn.

However, Applicants nonetheless respond herein to the written description arguments made by the Examiner in the instant rejection. The Examiner has rejected claims 35-59 under 35 U.S.C. § 112, first paragraph as allegedly not having written description in the specification sufficient to convey to one skilled in the art that the inventors were in possession of the claimed invention as of the filing date. In particular, the Examiner asserts that

> Mature forms, and secreted forms of this polypeptide have not been disclosed in the instant specification. Furthermore, beyond the mere mention of mature forms and secreted forms and general methods of how to isolate such forms (pages 8-10 of specification), no disclosure is made in the specification of the mature forms of human chemotactic chemokine polypeptides.

See Paper No. 10, page 5, line 19, through page 6, line 1.

Applicants respectfully disagree and traverse.

As a preliminary matter, Applicants respectfully note that none of the pending claims recite "secreted forms" of the polypeptides, and only claims 42 and 60(c) recite

"the mature polypeptide encoded by the cDNA in ATCC Deposit No. 97304." The remaining claims recite specific amino acid residues of SEQ ID NO:2, or the full length polypeptide encoded by the cDNA in ATCC Deposit No. 97304. In *Vas-Cath Inc. v. Mahurkar*, 19 U.S.P.Q.2d 1111, the Federal Circuit held that "applicant must clearly convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention," and that the invention, for purposes of the written description requirement is "whatever is now claimed" (emphasis added). Further, the M.P.E.P. states that the "'essential goal' of the description of the invention requirement is to clearly convey the information that an applicant has invented the subject matter which is claimed." *See* M.P.E.P § 2163 at 2100-124, *see also In re Barker*, 194 U.S.P.Q. 470, 473 n.4 (CCPA 1977), *cert. denied,* 434 U.S. 1064 (1978) (emphasis added). Based on the teachings of *Vas-Cath* and the M.P.E.P. guidelines, a rejection under the written description requirement is only proper when applied to subject matter actually claimed by an applicant. Thus, Applicants respectfully submit that the Examiner's arguments concerning unclaimed secreted or preprocessed forms of the polypeptide of the invention are improper.

Notwithstanding the foregoing, Applicants respectfully note that support for these claims is readily found throughout the specification and claims as originally filed. Specifically, as noted in the amendment filed February 8, 2000, support for claims 35-55 can be found, for example, in original claims 20-24 and 1-19; support for claim 57 is found, for example, in original claims 26-27 and 34; support for claim 56 is found, for example, in the paragraph bridging pages 30-31 of the instant specification; and support for claims 58-59 is found, for example, on page 12, third through fifth paragraphs of the instant specification. Thus, Applicants have supplied evidence that the specification contains adequate written description to support claims 35-41, 43-51, and 53-59.

With regard to the claims that recite mature forms of the polypeptide encoded by the deposited cDNA, Applicants respectfully direct the Examiner's attention to M.P.E.P § 2163.07(a), which states that by "disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory or has an advantage, a patent application necessarily discloses that function, theory or advantage, even though it says nothing explicit concerning it" (emphasis added). Furthermore, an inherent disclosure must be recognized by those of ordinary skill in the art. *See*, *Hyatt v. Boone* 47 U.S.P.Q.2d 1128, 1132 (Fed. Cir. 1998); *Continental Can USA v. Monsanto Co.*, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991). By disclosing a plasmid that inherently encodes the mature form of the protein, the specification necessarily discloses the mature protein generated by expression of the plasmid. *See* M.P.E.P. § 2163.07(a). As such, the disclosure of the complete amino acid sequence of CC I in the specification at Figures 1 and 2, and SEQ ID NO:2, combined with the deposited plasmid, is sufficient to enable one of skill in the art to make and/or use the claimed invention.

Further, Applicants respectfully remind the Examiner that an applicant may rely on drawings filed as part of the application as sufficient disclosure of the claimed invention. *See* M.P.E.P. 608 at 600-50. With this in mind, Applicants respectfully direct the Examiner's attention to the specification at, for example, page 5, lines 4-7, which states:

> In accordance with another aspect of the present invention there is provided an isolated nucleic acid molecule encoding a mature polypeptide expressed by the DNA contained in ATCC Deposit No. 97304.

Additionally, the specification states at page 9, lines 28-30: "the present invention includes polynucleotides encoding the same mature polypeptides as shown in Figure 1 (SEQ ID NO:2) . . .". Thus, armed with both the complete amino acid sequence, the disclosure in the specification as to the putative mature form of CC I, the deposited plasmid encoding the mature form, as well as the knowledge that the mature portion is inherent to the

sequence itself, Applicants submit that one of skill in the art would not doubt that Applicants were in possession of the claimed invention at the time the instant application was filed.

In light of the above remarks, Applicants respectfully assert that the Examiner has failed to meet the burden required in presenting evidence or reasons why those skilled in the art would not recognize the claimed invention from the disclosure. M.P.E.P. 2163.04. *See also, In re Wertheim*, 541 F.2d 257, 262, 191 U.S.P.Q. 90, 96 (CCPA 1976); *Ex parte Sorenson*, 3 U.S.P.Q.2d 1462, 1463 (Bd. Pat. App. Inter. 1987). Moreover, Applicants respectfully assert that the Examiner will be unable to meet this burden because the specification conveys with reasonable clarity that Applicants were in possession of the claimed invention. Therefore, Applicants respectfully request that the rejection of claims 35-59 under 35 U.S.C. § 112, first paragraph be reconsidered and withdrawn.

IV. Rejection Under 35 U.S.C. § 102

The Examiner rejected claims 35-59 under 35 U.S.C. § 102(e) as being anticipated by Hitomi et al. (U.S. Patent No. 5,976,832). Specifically, the Examiner contends that "[t]he DNA and the protein of Hitomi et al. correspond to SEQ ID NO:1 and 2 of the instant application, respectively, thereby anticipating claims 35-59." Paper No. 10, page 6.

Applicants respectfully disagree and traverse.

Preliminarily, Applicants point out that the Examiner has not addressed Applicants' Declaration submitted on April 2, 2001, which is sufficient to demonstrate possession of the claimed invention by Applicants prior to the § 102(e) date of Hitomi et al.

As noted by the Examiner, in order for Hitomi et al. to stand as valid 102(e) art, the invention must be "described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent." *See* Paper No. 10, page 6. The application of Hitomi et al. was first filed in the United States on December 6, 1995, claiming priority to two Japanese patent applications. Thus, Hitomi et al. is entitled only to its December 6, 1995 U.S. filing date for use as a § 102(e) reference.

Applicants respectfully direct the Examiner's attention to the Declaration by each of the inventors of the present application under 37 C.F.R. § 1.131, submitted in the instant application on April 2, 2001. This Declaration demonstrates possession of the claimed invention prior to March 9, 1995. Specifically, the Inventors demonstrate that (1) they were in possession of cDNA clone "HALTA54" (later deposited at the ATCC as Accession No. 97304); (2) they had sequenced the human cDNA insert contained within the "HALTA54" clone therefrom; and (3) they had used the polynucleotide to produce the encoded protein in a baculovirus expression system, all prior to March 9, 1995, and all within the United States.

Thus, Applicants have demonstrated possession of the claimed invention prior to March 9, 1995, well before the December 6, 1995 § 102(e) date of Hitomi et al. Accordingly, the rejection of claims 35-59 as unpatentable over Hitomi et al. has been obviated, and Applicants respectfully request that the rejection of claims 35-59 under 35 U.S.C. § 102(e) be reconsidered and withdrawn.

Conclusion

Applicants respectfully request that the above-made amendments and remarks be entered and made of record in the file history of the instant application. Applicants believe that this application is in condition for substantive examination. If in the opinion of the Examiner, a telephone conference would expedite prosecution, the undersigned can be reached at the telephone number indicated below.

If there are any fees due in connection with the filing of this paper, please charge the fees to Deposit Account No. 08-3425.

Respectfully submitted,

Date: November 15, 2001

Mark J. Hyman (Reg. No. 46,789)
Attorney for Applicants

Human Genome Sciences, Inc.
9410 Key West Avenue
Rockville, MD 20850
Phone: (240) 314-1224

Enclosures
JKE/MJH/LT/ba

VIA HAND DELIVERY NOVEMBER 15, 2001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: NI et al.

Application Serial No.: 09/227,854 Art Unit: 1646

Filed: January 11, 1999 Examiner: Prasad, S.

For: Human Chemotactic Cytokine I Attorney Docket No:: PF210D1

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

The title of the specification has been amended as follows:

Human Chemotactic Cytokine 1 ~~Polynucleotides~~ Polypeptides

In the Claims:

Non-elected claims 1-19 and 25-34, and claims 55-59, have been canceled without prejudice or disclaimer. Claims 60-70 have been added.

Applicants believe that this Information Disclosure Statement is being filed after the period specified in 37 C.F.R. § 1.97(b), but before the mailing date of a final action under § 1.113, a notice of allowance under § 1.311, or an action that otherwise closes prosecution in the application. Pursuant to 37 C.F.R. § 1.97(c), the Patent and Trademark Office will consider this Information Disclosure Statement if it is accompanied by the fee as specified in 37 C.F.R. § 1.17(p).

Accordingly, the Commissioner is hereby authorized to charge Deposit Account No. 08-3425 in the amount of $180.00 as payment of the fee required under 37 C.F.R. § 1.17(p), as itemized on the enclosed fee transmittal sheet. The Commissioner is also authorized to charge any additional required fee or credit any overpayment in connection with this submission to our Deposit Account No. 08-3425.

Respectfully submitted,

Date: November 15, 2001

Mark J. Hyman (Reg. No. 46,789)
Attorney for Applicants
Human Genome Sciences, Inc.
9410 Key West Avenue
Rockville, MD 20850
Phone: (240) 314-1224

Enclosures
JKE/MJH/LT/ba